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10/689,366	10/20/2003	Mark Beaumont	DB001071-000	4384

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EXAMINER	
LINDLOF, JOHN M	
ART UNIT	PAPER NUMBER
2183	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/689,366	BEAUMONT, MARK	
	Examiner	Art Unit	
	JOHN LINDLOF	2183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 August 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/25/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-28 are presented for examination.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3-4, 12-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claims 3-4, 14-15, 23-27, the scope of meaning of the terms Col_Index and Row_Index and how they are applied to a row or column shift is unclear. These terms are undefined within the claims. Additionally, these variables are seemingly only used for a specific direction of shifting either rows or columns of data, however this has not been made clear in the claims.

Claim 12 recites the limitation "the originally held data". There is insufficient antecedent basis for this limitation in the claim. Claims 13-22 are rejected for being dependent upon rejected claim 12.

Claim 23 recites the limitations “array size” and “an n x n array”. It is unclear of what this array is made. The claim previously describes "processing elements arranged in one of rows and columns", however a link between the processing elements and the n x n array has not been made. For the purposes of examination this “array” has been interpreted as an array of the processing elements.

Claim 28 recites the limitation "the data". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor, US Patent 4,992,933 (hereinafter Taylor), in view of Huang, MC68HC12 An Introduction: Software and Hardware Interfacing (hereinafter Huang).

2. As per claim 1, Taylor teaches:

A method for generating a reflection of data in a plurality of processing elements, comprising: shifting the data along either the rows or columns of the plurality of processing elements arranged in an N x N array, where N is greater than three (see e.g. col. 9 line 65 - col. 10 line 38, fig. 7a-b); and selecting from said received data a final output based on a processing element's position.

Taylor fails to explicitly teach shifting until each processing element in each row or column has received the data originally held by every other processing element in that row or column.

Huang teaches rotating data sequentially and performing multiple sequential shifts so that each storage element receives the data held by every other element (see e.g. pg. 62-3 explaining shift and rotation instructions, pg. 66 shows example 2.22 executing a "RORA" rotate instruction and example 2.23 which shifts and wraps data through all the registers holding the data; using a "RORA" or rotate right instruction sequentially shifts the data by one place on each shift until each register has received the data held by each other register).

Taylor discusses performing a series of shift operations which move rows of data around an array (see e.g. col. 9-10). These shifts are not explicitly done through all of the data within a row, however Taylor clearly has the capability to perform varied length shifts. Huang discusses looping through all of the data within a row (see e.g. example 2.23 to count all occurrences of the value zero). Examiner asserts that sequentially shifting/rotating data including all elements within a row of data is extremely common in the art.

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Taylor and Huang to shift data through all elements of a row or column so that each row or column has received the data originally held by every other processing element in that row or column. Taylor teaches sequential shifts. Changing the shift distance would have been obvious because it achieves the predictable result of shifting the data elements a different distance. Additionally, this uses the ability to move data to any processor in the array. It would also provide a way of counting data elements such as disclosed by Huang.

3. As per claim 2, Taylor in view of Huang teaches:

The method of claim 1 additionally comprising one of loading an initial count into each processing element and calculating an initial count locally based on the processing element's location, said selecting being responsive to said initial count (The examiner asserts that the NEWS setting for each processing element sets the shift count to 1+(n/2) (Col. 10 line 18). Further, data is made final (output) after the final shift has occurred, which is resultant on the initial count value.).

4. As per claims 3-4, Taylor in view of Huang teaches:

The method of claim 2.

Taylor teaches wherein said plurality of processing elements is arranged in an array and a value given by the expression (2 x Col_Index) MOD (array size) or (2 x Row_Index) MOD (array size), where array size equals N (see e.g. col. 10 reflection before and after of array; The claimed expression specifies the distance in one direction that a data element must be moved in order to be in its reflected position such as shown in applicant's fig. 16A-H, 17; Taylor teaches shifting data elements a certain distance in a direction in order to be in their reflected position. This must be done in order to have the data in the correct positions. Therefore even though the data of Taylor travels along different paths, the end distance shifting in either the x or y direction for a row or column reflection is the value given by the claimed expression).

Taylor fails to explicitly teach said initial count is given by the expression.

Huang teaches a count value given by a magnitude of shifting in a specific direction (see e.g. pg. 66, loop count).

Taylor discusses performing a series of shift operations which move rows of data around an array (see e.g. col. 9-10). These shifts are not explicitly done through all of the data within a row, however Taylor clearly has the capability to perform varied length shifts. Huang discusses looping through all of the data within a row (see e.g. example 2.23 to count all occurrences of the value zero). Examiner asserts that storing a one directional shift amount is extremely common in the art.

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Taylor and Huang to store a count of a magnitude of a shift in one direction. Taylor teaches performing a set number sequential shifts. Storing a count of a magnitude of shifts in one direction would have provided the predictable result of limiting a number a shifts based on a count.

5. As per claim 5, Taylor in view of Huang teaches

The method of claim 2 additionally comprising maintaining a current count in each processing element, said current count being responsive to said initial count and the number of data shifts performed, said selecting being responsive to said current count (The examiner asserts that Taylor's processor inherently keeps track of the shift count as a current count. If no current count was maintained, the processor may never stop shifting data between processing elements.).

6. As per claim 6, Taylor in view of Huang teaches:

The method of claim 5 wherein said maintaining a current count includes altering said initial count at programmable intervals by a programmable amount (see e.g. Huang pg. 66).

7. As per claim 7, Taylor in view of Huang teaches:

The method of claim 5 wherein said initial count is decremented in response to said shifting of data to produce said current count (see e.g. Huang pg. 66).

8. As per claim 8, Taylor in view of Huang teaches:

The method of claim 6 wherein said selecting occurs when said current count is non-positive (see e.g. Huang pg. 66).

9. As per claim 9, Taylor in view of Huang teaches:

The method of claim 1 additionally comprising maintaining a local count including setting a counter to a first known value, and counting up from said first known value (The examiner asserts that Taylor's processor inherently keeps a shift count for moving data from processing element to processing element. If the count was not maintained, the processor would not know when to stop shifting data.).
based on the number of shifts that have been performed, said selecting occurring when a current count equals a target count.

Taylor fails to disclose counting up from said first known value based on the number of shifts that have been performed, said selecting occurring when a current count equals a target count.

Official Notice is taken that incrementing a counter and comparing it to a stored comparison value is well known in the art.

Incrementing a local count provides a simple implementation to ensure a function is performed a correct number of times, ensuring proper operation of the processor.

It would have been obvious to one of ordinary skill in the art at the time of invention to have incremented a count in Taylor's processor until it matched a stored value required by the NEWS setting to ensure the proper number of shifts was performed.

10. As per claim 10, Taylor in view of Huang teaches:

The method of claim 1 wherein said shifting includes a wrap shift (see e.g. Taylor Fig. 7a and 7b disclose shifting occurring where values wrap from one row/column to the row/column on the other side of the array.).

11. As per claim 11, Taylor in view of Huang teaches:

The method of claim 10 wherein said wrap shift includes shifting data west to east and east to west along rows, or includes shifting data north to south and south to north along columns (see e.g. Taylor Fig. 7b discloses data moving east to west along the row and from west to east as it wraps from the far left column to the far right column.).

12. Claims 12-22 are rejected for reasons corresponding to those given above for claims 1-11.

13. Claims 23-27 are rejected for reasons corresponding to those given above for claims 1-11. **Examiner's note**: Claim 23 does not provide a minimum value for the variable n, therefore the claimed limitation may be taught by a 1x1 array.

14. Claim 28 is rejected for reasons corresponding to those given above for claim 1.

Response to Arguments

Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN LINDLOF whose telephone number is (571)270-1024. The examiner can normally be reached on Monday-Friday 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on (571) 272-4162. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Eddie P Chan/
Supervisory Patent Examiner, Art Unit 2183

John Lindlof
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